

What I have already learnt

Properties of Materials (Years 3 & 4): Understanding the characteristics of different materials, such as hardness, flexibility, and permeability.

Types of Rocks (Years 4 & 5): Detailed study of igneous, sedimentary, and metamorphic rocks, including their formation processes and properties.

Rock Cycle (Year 5): Understanding the continuous process through which rocks are formed, broken down, and transformed.

Fossils (Year 4 & 5): Basic knowledge of how fossils are formed and their importance in studying Earth's history.

Soil Formation (Year 5): Knowledge of how soils are formed from rocks and organic matter and the different types of soil.

Subject Knowledge Organiser

Science - Rocks Year 6

Key Knowledge

Rock Cycle: In-depth understanding of the processes that change rocks from one type to another, including:

- Weathering: The breakdown of rocks into smaller pieces.
- Erosion: The transportation of rock particles by wind, water, or ice.
- Sedimentation: The accumulation and compression of sediment to form sedimentary rocks.
- Metamorphism: The transformation of existing rocks into metamorphic rocks under heat and pressure.

Detailed Rock Types and Their Uses:

- Igneous Rocks: Composition, texture, and uses in construction and industry (e.g., basalt, granite).
- Sedimentary Rocks: Formation from sediment layers and their uses in construction and as fossil records (e.g., sandstone, limestone).
- Metamorphic Rocks: Changes due to heat and pressure, and their uses (e.g., marble for sculpture, slate for roofing).

Fossils: Advanced understanding of fossilization processes, types of fossils (e.g., molds, casts, and trace fossils), and their significance in geological time scales and evolutionary studies.

Soil Properties and Classification: Detailed study of soil horizons, soil texture (clay, sand, silt), and their implications for agriculture and environmental health.

Wider opportunities

Diversity and Cultural Capital

Field Trips: Visits to geological sites, quarries, or museums to observe and investigate rocks, fossils, and soil in real-life contexts.

Cultural Significance: Exploration of how different cultures have utilized rocks and minerals, from ancient architecture to traditional practices (e.g., Incan masonry, Egyptian pyramids).

Environmental Impact: Understanding the role of rocks and soils in sustainability and environmental management, including their use in renewable energy sources and conservation efforts.

Career Awareness: Introduction to careers related to geology, palaeontology, environmental science, and engineering, highlighting contributions from diverse cultures and regions.

My Skills and Knowledge that I may use from other subjects

Maths:

- Measuring and calculating the physical properties of rocks and soils (e.g., volume, density).
- Analysing and presenting data using charts, graphs, and statistical methods.

Geography:

- Understanding the impact of geological processes on landscapes and natural features.
- Studying the role of rocks and soils in environmental and ecological systems.

History:

- Exploring how historical societies have used rocks for construction and tools.
- Investigating the historical significance of fossils and geological discoveries.

Art and Design:

- Creating artworks inspired by rock formations, fossils, and geological patterns.
- Designing projects that incorporate rock and soil textures.

English:

- Writing detailed scientific reports and explanations of experiments.
- Using scientific vocabulary accurately in oral and written communication.

Computing:

- Researching geological information and creating digital presentations of findings.
- Using software for modelling and analysing rock and soil properties.

What I will have learnt by the end of my Key Stage

- I will have an advanced understanding of geological processes, including the rock cycle and how rocks and soils are formed and transformed.
- I will be able to explain the significance of fossils in studying Earth's past and the evolution of life.
- I will have developed practical skills in investigating and analysing rock and soil properties, using scientific methods to draw conclusions.
- I will understand the importance of rocks and soils in various aspects of human life and the environment, including construction, agriculture, and natural resource management.

Key Skills I will learn/use

Scientific Inquiry: Designing and conducting detailed experiments to test rock and soil properties, analysing results, and making evidence-based conclusions.

Observation and Classification: Identifying and classifying rocks and soils based on their physical and chemical characteristics.

Data Analysis: Recording and interpreting experimental data, and using it to make informed predictions and conclusions.

Communication: Effectively presenting scientific findings through written reports, presentations, and discussions.

Critical Thinking: Evaluating evidence from experiments and observations, and applying this knowledge to solve real-world problems.

Recall and Remember

What processes are involved in the rock cycle, and how do they transform rocks?

Weathering, erosion, sedimentation, metamorphism.

How do igneous rocks form, and what are some common examples?

Formed from cooled magma or lava; examples include granite and basalt.

What are sedimentary rocks, and how are they formed?

Formed from layers of sediment compressed over time; examples include sandstone and limestone.

What processes lead to the formation of metamorphic rocks?

Metamorphism, involving heat and pressure transforming existing rocks; examples include marble and slate.

What is fossilization, and what types of fossils can be found in sedimentary rocks?

Fossilization is the process of preserving remains of organisms; types include body fossils, molds, casts, and trace fossils.

What factors affect soil properties and its classification?

Soil texture (sand, silt, clay), organic matter, and soil horizons.

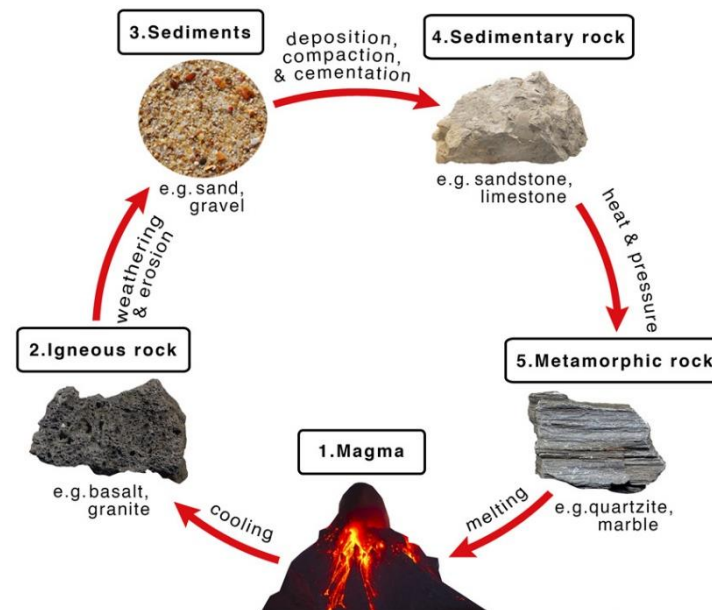
How does soil permeability affect its use in agriculture?

It affects how well water drains through the soil, influencing plant growth and soil fertility.

What are some uses of different types of rocks in industry and construction?

Granite for countertops, limestone in cement, marble for sculpture, slate for roofing.

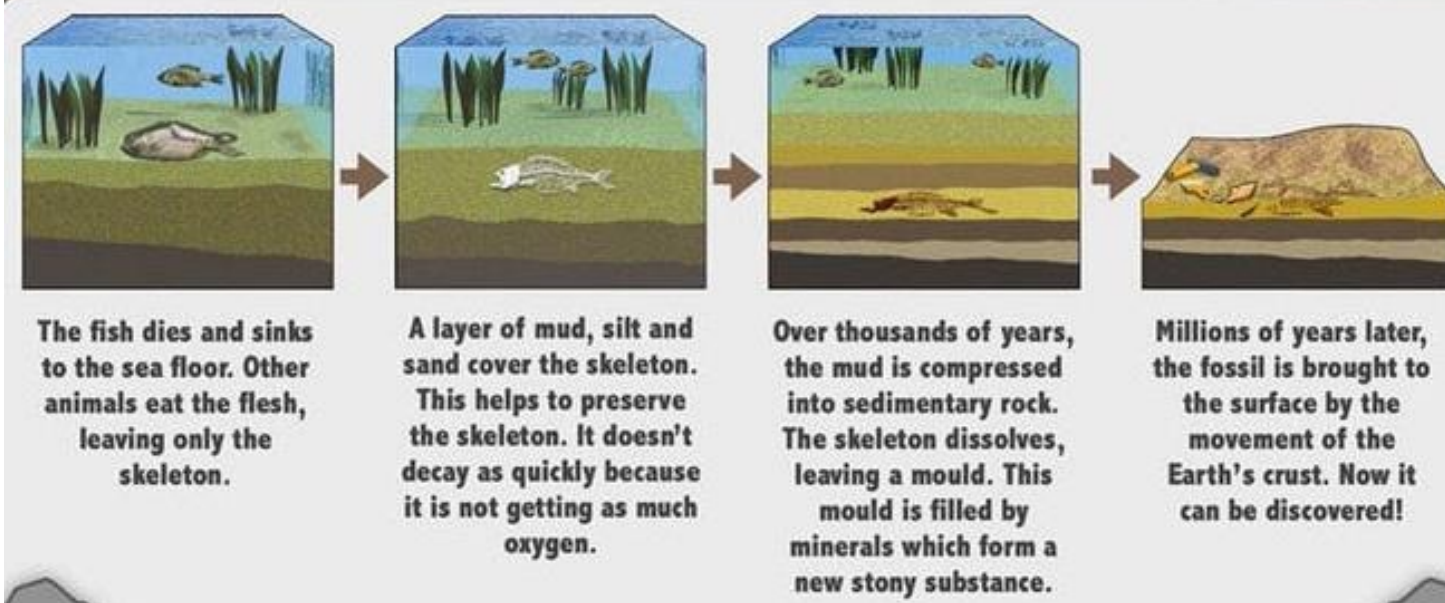
Steps of the Rock Cycle



Body fossils show us what a plant or animal looked like. They are the fossilised remains of an animal or plant, like bones, shells and leaves.



FOSSIL FORMATION



Key Scientific Concepts

Biology

Chemistry

Physics

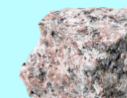
Scientific enquiry

Science for the future

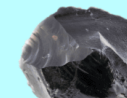
Types of Rocks

Igneous

- Forms from magma or lava solidification
- Hard, no layers



Intrusive
slow magma cooling



Extrusive
rapid lava cooling

Sedimentary

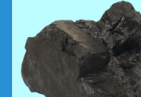
- Forms from sediment compaction
- Crumbly, layered



Clastic
compacted broken rocks



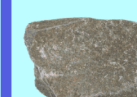
Chemical
compacted dissolved minerals



Organic
compacted biogenic matter

Metamorphic

- Forms by transformation of other rocks
- Relatively hard, may or may not have layers



Foliated
has layers



Non-Foliated
no layers

Key Vocabulary

Weathering: The process of breaking down rocks into smaller particles.

Erosion: The movement of rock particles from one location to another.

Sedimentation: The process of depositing sediment to form new rock layers.

Metamorphism: The transformation of existing rocks under heat and pressure.

Fossilization: The process through which remains of organisms become preserved in rock.

Horizon: Distinct layers within soil, such as topsoil and subsoil.

Texture: The feel or appearance of a soil, determined by its composition (e.g., sandy, clayey).

Permeability: The ability of a material to allow fluids to pass through it.

Sedimentary Structures: Features like strata or fossils found within sedimentary rocks.